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possible from errors of all kinds. Plate No. 5 consists of 21 lines separated by an interval of $\frac{1}{20}$ mm. After careful measurement with two different micrometers and two comparators, the plates were sent to Prof. Morley, the details of whose measurements will be found in the forthcoming volume of the Proceedings of the American Academy of Arts and Sciences. The degree of agreement between his results and my own is much more perfect than I had anticipated before beginning this investigation.

From this investigation I think we may safely draw the following conclusions: (*a.*) Two equally skillful observers can measure the same space within about $\frac{1}{300000}$ of an inch if the space does not exceed $\frac{1}{500}$ of an inch. For a space of $\frac{1}{100}$ of an inch the deviation will probably amount to $\frac{1}{80000}$ of an inch in case the measurements are made with an eye piece or a filar micrometer. (*b*). The average deviation for accumulated errors under similar conditions is not far from $\frac{1}{50000}$ of an inch for eleven intervals. For a larger number of intervals the deviation will be somewhat larger, but it will not be in proportion to the number of intervals. (*c*). A single observer can obtain an agreement with a normal equation representing all the observed values as far as a solution by least squares can represent them, within somewhat smaller limits than those obtained by comparing the results obtained by two different observers.—*Wm. A. Rogers, Harvard College Observatory.* (*From a paper read at the National Microscopical Congress, August,* 1878.

THE SOCIETY SCREW.—At a recent meeting of the State Microscopical Society of Illinois, Mr. Bulloch urged the desirability of adopting a uniform objective screw of larger size than the society screw now in use, as being essential to the efficiency of low power lenses of high angle. That the society screw, which has now become an almost indispensable convenience, is too small to admit of efficient work from these lenses, is a conceded fact, and some makers in this country who make low powers of enormous angle have already adopted special screws for them. The uniformity urged by Mr. Bulloch is greatly to be desired, and could be easily attained if its importance were appreciated in time.

EXCHANGES.—Gatherings containing polycystina, etc., wanted in exchange. Address I. F. Stidham, Columbus, Ohio.

Western mosses, etc., for other species. George W. Worcester, West Side, Crawford Co., Ohio.

Diatomaceous earths and named diatoms for named diatoms or other good mounted objects. M. A. Booth, Longmeadow, Mass.

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SCIENTIFIC NEWS.

— The United States Entomological Commission, attached to the United States Geological and Geographical Survey of the

Territories, has issued its first report on the Rocky Mountain locust, or destructive grasshopper of the West, a volume of 700 pages, fully illustrated with maps, plates, and woodcuts.

The favorable predictions made by the commission last winter had an encouraging effect, and stimulated the immigration to the country of late years ravaged by locusts. The statement which a full survey of the field enabled the commission to make in advance, viz: that there would be no serious injury in 1878, has been fully verified. The commissioners have continued their labors during the past summer, confining their attention to that northwestern portion of the country which they have designated as the Permanent Region, the object being to gather further knowledge of that region, with a view of preventing the ravages of the Rocky Mountain locust therein and its migration therefrom.

The problem of destroying the young insects as they hatch out in the more fertile country in the agricultural regions of the West, is virtually solved in the report which the commission has already issued, and the task which they now undertake is to endeavor to prevent the migration of the winged insects from the Permanent Region into the more thickly settled country.

An appropriation of $25,000 was asked of the last Congress for the completion of the work mapped out, and $10,000 were appropriated, and this only toward the end of the fiscal year. The commissioners ask for an additional sum of $15,000, in order that they may be able to continue their investigation until the practical work is accomplished. It was too late in the season when the last appropriation was obtained to permit the completion of the work this year, but with such means as they have husbanded, added to the additional appropriation asked for, and with promised assistance by the Dominion authorities, they will be enabled, by getting into the field early the coming spring, to complete fully the work assigned to them.—*From the Report of the Secretary of the Interior for* 1878.

— A report of the Chesapeake Zoölogical Laboratory for the last summer appears in the Third Annual Report of the John Hopkins University, Baltimore. This laboratory was established by Prof. W. K. Brooks for the higher instruction of the students of the University and others in zoölogy. It was opened at Fort Wool, June 24, 1878, and closed Aug. 19th. Some excellent work was accomplished, notwithstanding the lack of the large marine animals. Enough was accomplished, we should judge, to warrant the authorities of the University in maintaining the school and rendering attendance upon it a necessary part of the biological course.

We notice that the following papers in biology were read at the meetings of the Scientific Association of the John Hopkins University: On the early stages in the development of Gastropods, by W. K. Brooks; A review on the expenditure of energy by working muscle, by H. N. Martin; On the formation of the female pelvis, by C. Sihler; On the influence of stimulation of the optic lobes upon the respiratory center of the frog, by H. N. Martin; Contributions towards a history of the Maryland Cambari, by P. R. Uhler; The Urodela of North America, by S. F. Clark.

— The work of the United States Fish Commission was carried on with an unusual degree of success at Gloucester, Mass., during the past summer. The steamer *Speedwell* made her last trip September 26th, having been used almost daily in dredging trips since the middle of July. Prof. Baird, the commissioner, was assisted by Professor Verrill, Mr. Richard Rathbun and Mr. Sanderson Smith, who paid special attention to the marine invertebrates; Prof. Farlow studied the algæ, Prof. Goode, Dr. Bean and Mr. Earle attended to the fishes, while Mr. Asaph Hall, Jr., had charge of the temperature observations. A good many new fishes, corals and other invertebrates were collected, while much that is new regarding food-fishes and fisheries was discovered. The energy and success of the manifold operations of this important Commission are most apparent.

— A goose belonging to a Gloucester, Mass., family died last week at the advanced age of 70 years. They have another still living that is known to be 50 years of age.

We have not endeavored to substantiate this statement, but copy it from the daily papers. Geese of this age certainly deserve an obituary notice. Can any one give us authentic statements regarding the extreme old age of fowl and quadrupeds?

— We learn from Mr. S. H. Scudder that a hymenopterous insect (Myrmar) very slightly larger than *Pteratomus putnamii*, being very slightly over one-ninetieth of an inch long, has been found in amber, according to Duisberg's Zur Bernstein Fauna (Schriften K. Phys. Okonomische Gesellschaft zu Königsberg. Band 9, p. 23). These two insects are members of the same family (*Proctotrupidæ*) and are the smallest insects yet known.

— B Westermann & Co. send us the title of an important work whose publication has just begun, viz: Buctecker's Systema Entomologiæ sistens Insectorum Classes, Genera, Species. Pars I. Odonata (Fabric.) Europ. 42 tabulæ, photograph. floridisque coloribus distinctæ. Colored $27.50, plain $13.20 This work will be published in fifteen volumes, and its continuation is secured, the MS. being all ready.

— We have been repeatedly asked what is the figure on the first page of the cover of this magazine. It is copied from a figure in Haeckel's great work on Radiolaria, of his *Eucyrtidium cran-*

oides. The bell-shaped shell is perforated by numerous holes, out of which stream in all directions the pseudopodia, some of which are enlarged at intervals into small masses of protoplasm.

— The death has recently been announced of Sir Richard John Griffith, Bart., the geologist and engineer, who died in Dublin, aged 94 years; of Thomas Belt, an English mining engineer and geologist, well known from his "Naturalist in Nicaragua," who died at Denver, Colorado, Sept. 22d; and of Prof. Robert Harkness, who died Oct. 3d, at Dublin.

— Subscriptions are solicited for a Manual of Conchology; structural and systematic, with illustrations of the species, by George W. Tryon, Jr., conservator of conchological section of the Academy of Natural Sciences, of Philadelphia. Vol. i, Cephalopoda, will be published by the author at Philadelphia, during the the coming year.

— The schooner *Florence*, of the Howgate Arctic Expedition, which returned at the close of October, Congress having failed to appropriate money for Polar colonization, brought home valuable collections of specimens and drawings, made by Mr. Kumlein, the naturalist of the expedition.

— Under the name of *Science News*, Mr. S. E. Cassino, of Salem, Mass., publishes an octavo fortnightly magazine of sixteen pages, edited by Messrs. Ernest Ingersoll and W. C. Wyckoff. It is devoted to general science, physical as well as natural.

Dr. Kalter, the editor of the *Entomologische Nachrichten*, published fortnightly at Putbus a Rûgen, Germany, desires copies of papers and articles by North American entomologists for notice in his periodical.

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PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Proceedings of the Academy of Natural Sciences of Philadelphia, Nov. 5, 1878.—Thos. Meehan and others remarked upon the indigenous character of *Calluna vulgaris.*

Nov. 12.—Dr. Jos. Leidy made some remarks on the distribution of *Chenopodium*; he also described some parasites of *Donax fossor*, one of which he named *Distomum cornutifrons.* Meehan remarked on *Mitchella repens.* Dr. A. J. Parker made some remarks on the comparative development of the Island of Reil in the brains of Primates.

Nov. 19.—Messrs. Gray, Redfield and Meehan spoke on the evidence in favor of the indigenous character of *Calluna vulgaris.* Drs. Leidy and Evarts made observations upon Gordius, the former gentleman describing a new species parasitic in *Clepsine* which he called *G. tenuis.*

Dec. 3.—Dr. Leidy made some remarks on the rarity of *Taenia*